Transition of AIRS Soundings to the National Weather Service

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NASA's Short Term Prediction Research and Transition (SPoRT) Center

Mission: Apply NASA measurement systems and unique Earth science research to improve the accuracy of short-term (0-24 hr) weather prediction at the regional and local scale (http://weather.msfc.nasa.gov/sport/)

- Test-bed for rapid prototyping of new products
- Development of new products is end-user driven
- Transition research capabilities / products to operations
  - real-time (RT) MODIS, GOES, and AMSR-E data and selected products to National Weather Service (NWS) weather forecast offices (WFOs) and private entities (*e.g.* Worldwinds, Inc., The Weather Channel)
- Observations from AIRS can provide benefits to operations:
  - if forecasters learn the strengths and limitations of the data
  - if the data is available in forecasters' native system

AIRS Use in Operational Forecasting

- AIRS retrieves asynoptic soundings over a large area that supplement traditional upper air soundings

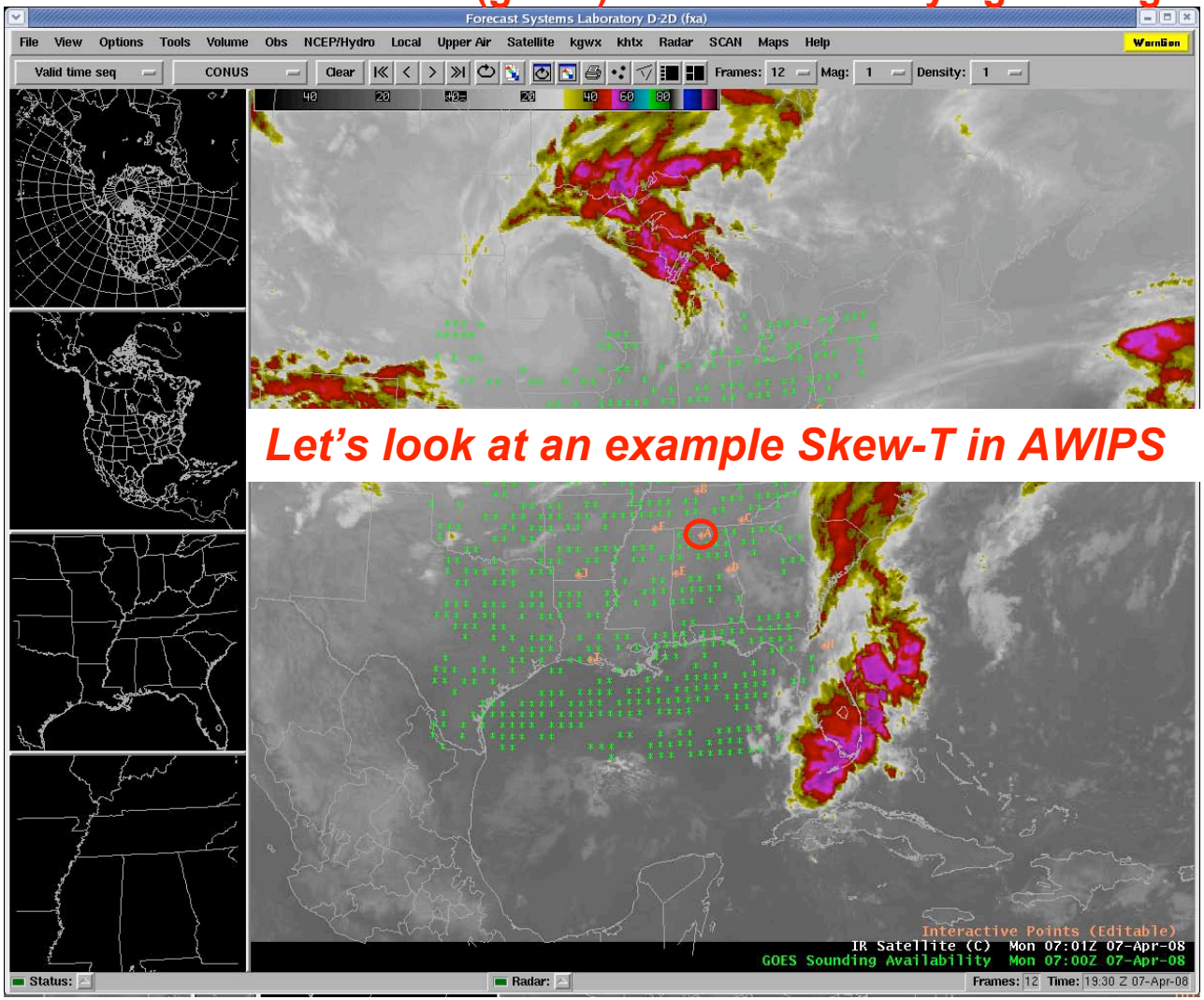
- AIRS soundings may be beneficial to predicting atmospheric stability in the pre-convective environment for improved severe weather forecasting

- Use direct broadcast data (U. Wisc.) to avoid lag of 0.5-1.5 hours, which is critical time for operational forecasting

- AIRS Data for operational forecasting:
  1. **L2 AIRS temperature and moisture profile product**
  2. **Assimilation of AIRS profiles and radiances into regional forecast models**
  3. **L1B AIRS imagery and products**

L2 Temperature and Moisture Profile Product

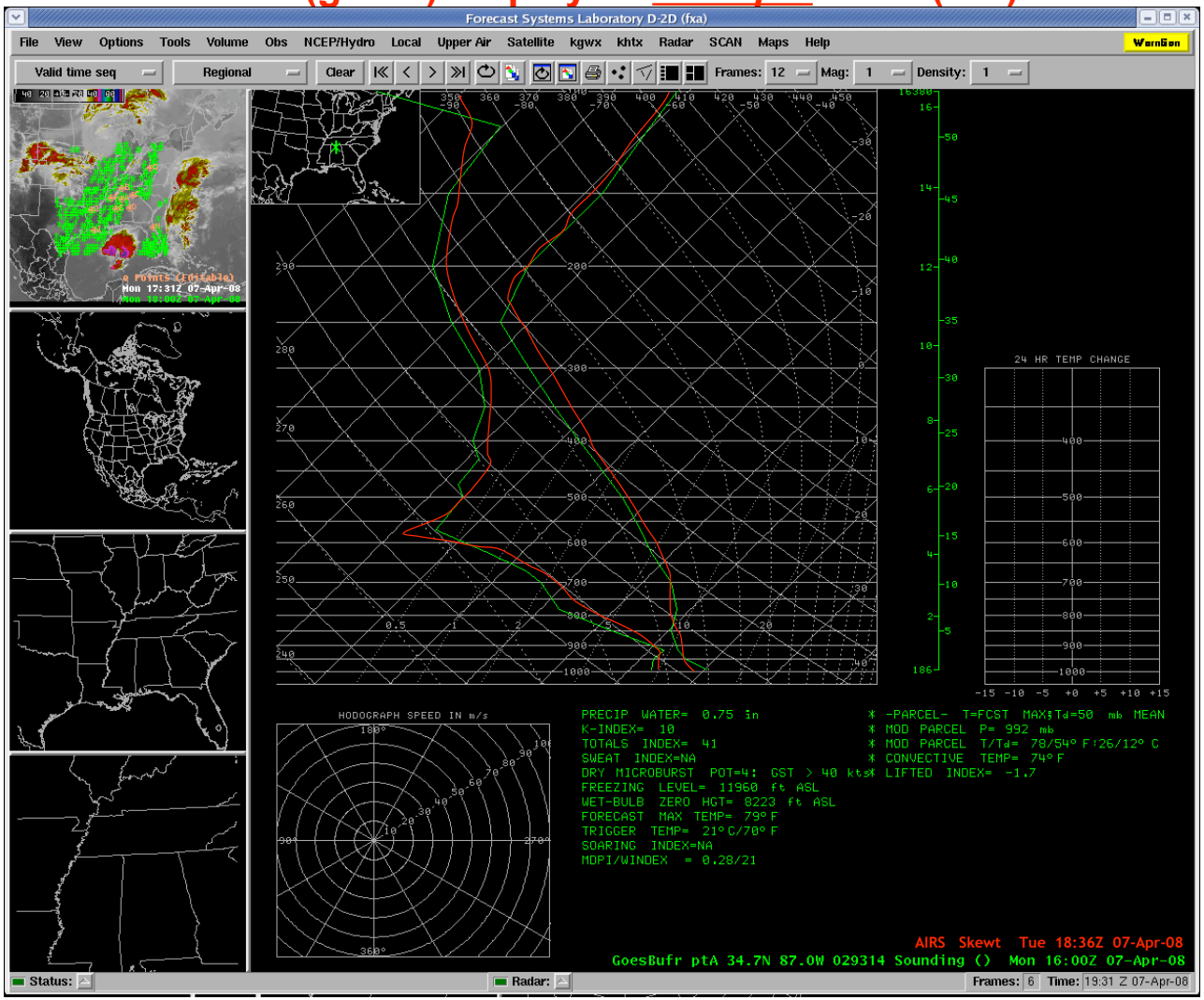
AWIPS GOES sounder (green) locations overlaying IR image



- Profiles configured for <u>view in native NWS display system</u> (AWIPS)
- Each golfball is represented by a grid box within AWIPS (green)
- Forecasters move interactive points (salmon) to view profiles
- AIRS profile locations overlain with satellite imagery to determine best soundings

L2 Temperature and Moisture Profile Product (cnt'd)

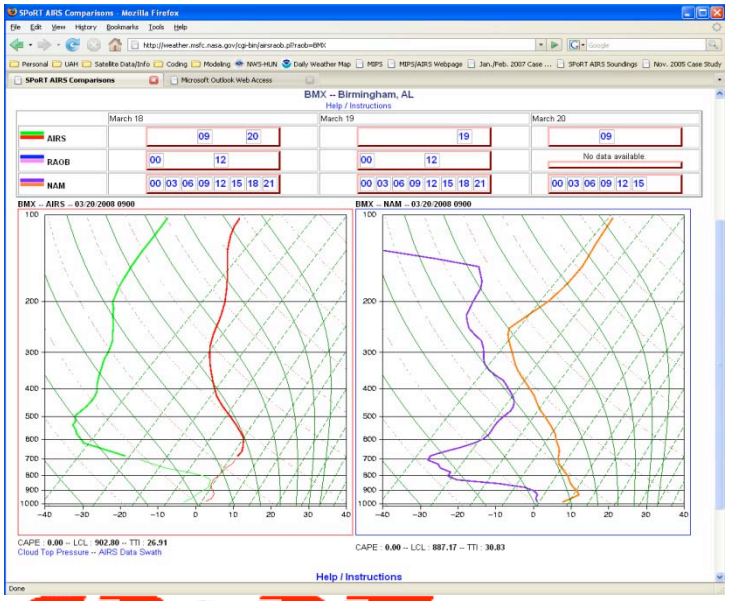
AWIPS GOES (green) display w/ *example* AIRS (red) overlain



- AIRS sounding overlain with other upper air observations
- Display multiple soundings to show frontal positions
- Profile information (e.g. stability, PWV) calculated by system and displayed for each observation

Training Forecasters

- Science Sharing Sessions with Huntsville NWS WFO
  - face-to-face interaction with forecasters
- Articulate training module for other offices in Southern Region
  - animated Powerpoint slides with voice over
- SPoRT's NRT sounding tool
  - soundings currently available to forecasters used for comparison to AIRS



transitioning unique NASA data and research technologies to the NWS

Summary

- SPoRT is transitioning direct broadcast AIRS profiles to the National Weather Service
  - provide asynoptic soundings over a large area
  - add atmospheric stability data in pre-convective environment
  - monitor moisture changes

- AIRS profiles will be inserted directly into AWIPS allowing forecasters to display them alongside other available data

- Using face-to-face presentations, remote presentations, and NRT web tool to train forecasters how to best use this new AIRS data set

Questions? Comments?

Visit the NRT Comparison Web Tool:
http://weather.msfc.nasa.gov/sport/airsraob/